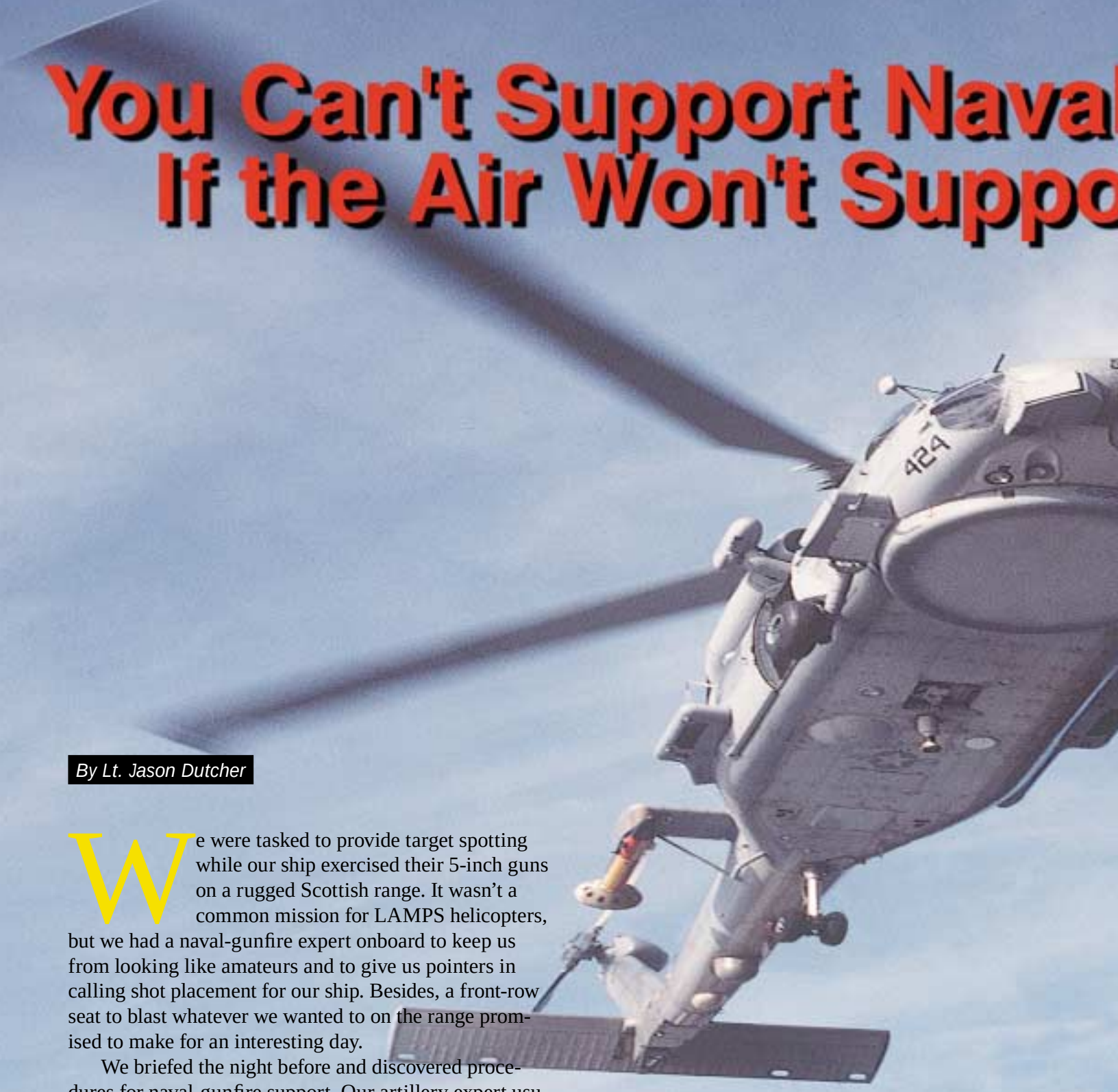
You Can't Support Naval If the Air Won't Suppo



By Lt. Jason Dutcher

We were tasked to provide target spotting while our ship exercised their 5-inch guns on a rugged Scottish range. It wasn't a common mission for LAMPS helicopters, but we had a naval-gunfire expert onboard to keep us from looking like amateurs and to give us pointers in calling shot placement for our ship. Besides, a front-row seat to blast whatever we wanted to on the range promised to make for an interesting day.

We briefed the night before and discovered procedures for naval-gunfire support. Our artillery expert usually worked with the Army and Marines and was not very familiar with the SH-60B. The brief brought him up to speed. We modified our crew tactics to incorporate our radar and data link, so the ship and helicopter would target from coordinated GPS plots.

The key to successful gunfire adjustments from a helicopter is to avoid racetrack patterns where it's easy to lose sight of the range. Instead, we planned to hover 300 feet over water, off the tip of a rocky cliff, with the impact range 3,000 meters to our right. We could keep our eyes on the range and maintain a fixed reference point for fire adjustments.

The drawback to this technique is it required a high-altitude hover. There are two risks with this maneuver. From our performance charts, we knew we would have enough altitude to recover from a single-engine failure,

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Photo by Sikorsky Aircraft

and this alleviated our major concern. However, there is the possibility of getting into vortex-ring state, sometimes called "power settling." This occurs when you try to add power while in a near-vertical descent from a hover. A descent through your rotor wash creates swirling vortices that spoil lift, so the more power you add, the worse it gets, and the faster you fall.

It seemed unlikely we would encounter this problem since power settling is rare. We were familiar with the corrective procedures, but we didn't brief them in detail. We assumed this phenomenon would not happen. Can you see where this is going?

The event began with me at the controls in the right seat, where I had the best view of the range. We got our bearings, and I held a stable, high hover, as we called out targeting adjustments. While I monitored the hits, I drifted slightly out of position and inadvertently climbed a few hundred feet. I was fixated on getting a better view to make accurate adjustment calls. As the ship's gunnery team zeroed in on our imaginary tanks, we decided to swap controls, so I could concentrate on watching the shots. The HAC took control in the left seat and had started correcting back into position from 600 feet when the aircraft suddenly began to shake and pitch up and down.

I looked at the HAC to see if he was trying a new flying maneuver. The serious look on his face told me he was not having fun. I initially thought the wind swirling around the cliffs had caused the turbulence, but, whatever the reason, we rapidly were descending through 400 feet and losing pitch control.

Recovery from power settling involves dropping the collective and gaining forward airspeed, so I immediately checked out the escape route in front of us. Instead of flat ocean, the edge of the cliff jutted out in front of us, 200 to 300 feet off the water. There was minimal room to gain speed as we descended. As outlined in NATOPS, the collective was lowered, but this action increased our descent rate. The vibrations started to lessen as we broke clear of the rotor wash. We fell faster but still needed time to gain airspeed, add power, and recover from the descent.

I suggested the HAC lower the nose to build airspeed, which would help drive us into smoother air. The cliff edge was getting closer and closer. If the airspeed didn't build up soon, we wouldn't be able to scoop out our descent. Ocean or cliff edge? Take your pick—they were competing to smack us first.

We had a combination of lowered collective, lowered nose, and an aircraft falling—not flying—toward the ocean and cliff. The HAC and I willed the aircraft to start flying again, and we held our breath. After a few seconds—which seemed like hours—the aircraft started a shallow climb. Airspeed built just enough so the HAC gingerly could bank the aircraft, dodge the cliff, and hold what little altitude we had. We thought the biggest danger that day was staying clear of the firing line! We only had a few feet to go before becoming part of that beautiful Scottish countryside and making a bigger explosion than a combination of all the 5-inch rounds fired.

It's not enough to execute EPs quickly and accurately. The best game plan is to assess and avoid risks associated with your intended flight regimes—even those you don't intend or expect. We didn't think power settling would be a problem for us, but we walked right into it. We were fortunate to execute a successful recovery, but had we discussed power settling in detail before the flight, we might have avoided it entirely.

Lt. Dutcher flies with HSL-48.